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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/589,789	02/01/2007	Hugh Charles Seton	ASTB 0055	2287

23377 7590 12/06/2010

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EXAMINER	
PETTITT, JOHN F	

ART UNIT	PAPER NUMBER
3744	

NOTIFICATION DATE	DELIVERY MODE
12/06/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

eofficemonitor@woodcock.com

Office Action Summary	Application No.	Applicant(s)	
	10/589,789	SETON ET AL.	
	Examiner	Art Unit	
	John F. Pettitt	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 October 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *1-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

Amendment to the specification dated 10/11/2010 is accepted.

Abstract

The amended abstract dated 10/11/2010 is accepted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 4-6, 8, 9-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Seton et al. (WO 98/06972) published 19 Feb 1998. Seton teaches a liquefied gas cryostat (fig. 2) that houses a Superconducting Quantum Interference Device for MRI (p. 3) which comprises: inner (3) and outer (2) walls defining an evacuated housing (page 3, line 35); multilayer insulation (MLI - page 4, line 2) positioned between the inner (3) and outer (2) walls; and at least one radiation shield (6) circumscribing the inner wall (3) between the inner (3) and outer (2) walls so as to extend over an area of the inner wall (3) which is contacted and cooled by liquefied gas (helium, page 8, line 2) in the cryostat when in use. Seton further teaches that the radiation shield (6) comprised a plurality of rods which are thermally conducting and electrically insulating when the cryostat contains liquefied gas (page 6, lines 25-30, being formed from electrically insulated strips or wires of aluminum or copper, lengthwise). Further, Seton

teaches that the radiation shield desirably is 2mm thick; that the shield comprises a glass reinforced plastic substrate on which the rods are positioned (page 6, line 30); that the shield comprises an end plate having a thickness of 2 mm (page 9, lines 28-29); that the shield (6) is cooled by being in contact with a venting tube (8) of the cryostat via a heat exchanger (copper or Al strips; p. 7, line 35) for transferring heat from the shield (6) to the tube (8), as liquefied gas boils off.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the obvious modification of Seton or in the alternative over Seton in view of Saho (US 2002/0024338) or Seifert (US 5065582).

Seton anticipates the limitations of claims 1, 4-6, 8, 9-14 as described above. Alternatively, the claimed invention of claims 1-14 is seen to be an obvious modification

of the teachings of Seton using an alternate analysis. That is, Seton teaches a liquefied gas cryostat (fig. 2) which comprises: inner (3) and outer (2) walls defining an evacuated housing (page 3, line 35); multilayer insulation (MLI - page 4, line 2) positioned between the inner (3) and outer (2) walls; and at least one radiation shield (6) circumscribing the inner wall (3) between the inner (3) and outer (2) walls so as to extend over an area of the inner wall (3) which is contacted and cooled by liquefied gas (helium, page 8, line 2) in the cryostat when in use; providing a radiation shield formed from sintered ceramic material, or sapphire or diamond powder composite, alumina, aluminum nitride, or silicon carbide (page. 7, lines 24-30).

Seton further teaches that the state of the art, at the time of the reference (1998), was to provide the shield in the form of electrically insulated strips or wires of copper or aluminum on a g.r.p tube to reduce eddy current losses (p. 6, lines 25-30). Therefore, this is seen as an explicit suggestion that providing shield material in the form of a plurality of rods reduces the eddy current losses in a radiation shield, and so it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to form the improved radiation shield material as was known in the art - in the form of strips or wires on a g.r.p tube for the purpose of decreasing eddy current losses further and for the purpose of reducing the material needed to make the shield and for the purpose of increasing the flexibility of the shield and for the purpose of reducing the weight of the shield and for the purpose of increasing the ease in preparing shields of various sizes.

In addition or in the alternative, it is noted that Saho teaches that radiation shields for SQUID cryostats are advantageously formed from a plurality of rods (see figures 5-6, 8-10) on an electrically insulating substrate (parag. 29, 30, 31, 35) for reducing eddy currents.

In addition or in the alternative, Seifert teaches that SQUID cryostats are advantageously formed from a plurality of rods (see figures 2-3, column 4, lines 45-67; column 5, lines 10-55). Therefore, in view of Saho and/or Seifert, it is shown that it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to form the improved radiation shield material in the form of strips or wires on a g.r.p tube as taught by Saho and/or Seifert for the purpose of decreasing eddy current losses.

Response to Arguments

Applicant's arguments filed 10/11/2010 have been fully considered but they are not persuasive.

1. Applicant's arguments (page 5) are concerning the amendments to the specification, abstract and claims. In response, it is agreed and the previous objections are withdrawn.

2. Applicant's arguments (page 5-6) are that the disclosed strips of Seton are not electrically insulating. In response, it appears that the applicant believes that the claims require where or in what way the rods need to be electrically insulating. This is simply not true, as the claim only requires that the plurality of rods are thermally conducting and electrically insulating when the cryostat contains liquefied gas. There is nothing to

limit how they be thermally conductive and how they may be electrically insulating. Seton's electrically insulated copper or aluminum strips are electrically insulating in a radial direction through the insulation and thermally conductive axially along their length. Therefore, the allegation is false and unpersuasive.

3. Applicant's arguments (page 6, ¶ 5) are an allegation that the use of rods does not result in any perceivable reduction in eddy current losses. In response, it is noted that the allegation is unsupported and insufficient to overcome the abundant evidence provided by Seifert and Saho that employing rods for the structure of a radiation shield reduces eddy currents.

4. Applicant's arguments (page 7, ¶ 1-2) are an allegation that once the radiation shield is made from the electrically insulating material of Seton that the eddy current losses would not be improved enough to warrant disposition of the radiation shield from a plurality of rods. In response, it is noted that the allegation is insufficient and ignores the evidence provided by the prior art. The prior art has already shown that forming the radiation shield from a plurality of rods is well known. Seton's use of a material that has improved properties for the radiation shield does not mean that those of ordinary skill in the art are suddenly incapable of applying the well known technique of forming the radiation shield from a plurality of rods for the purpose of further reducing the eddy currents through the material. Further, providing the shield in such a form further provides reduces the material needed to make the shield and increases the flexibility of the shield and reduces the weight of the shield and increases the ease in preparing shields of various sizes. Therefore the allegation is unpersuasive.

5. Applicant's arguments (page 7, ¶ 3) are that forming a radiation shield in a continuous cylinder or as rods would be no easier or cheaper. In response, it is noted that the allegation is not relevant to the rejection as the rods of material of the rejection are formed from expensive materials and therefore the allegation is unpersuasive.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Pettitt whose telephone number is 571-272-0771. The examiner can normally be reached on M-F 8a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on 571-272-4834 or 571-272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John F Pettitt /
Examiner, Art Unit 3744

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit 3744

JFP III
November 19, 2010